Helicopters and Helibuckets Used To Control Interior Alaska Wildfires

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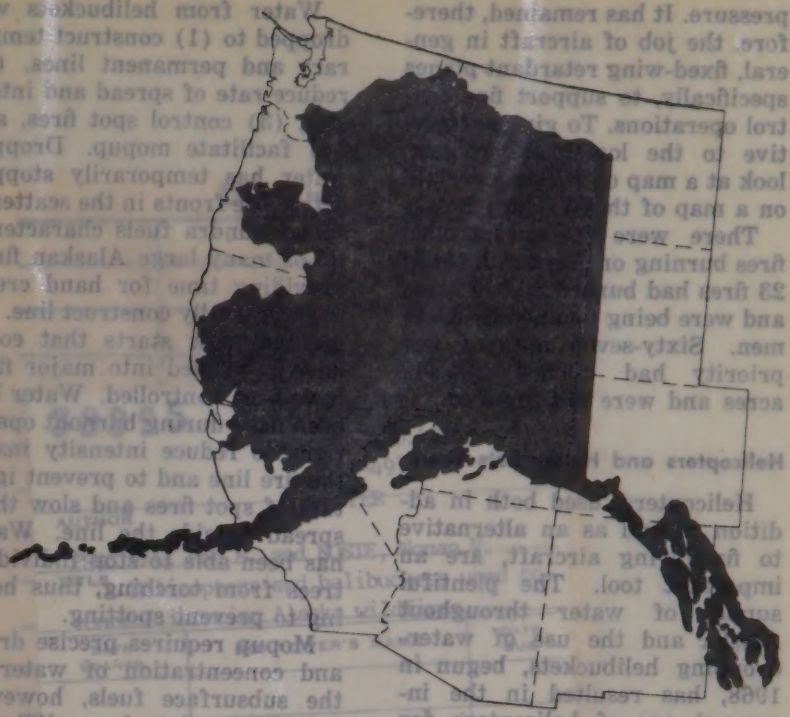
The tactical and logistical problems of controlling remote forest fires in Alaska are tied to the vastness of the country and the limited access to the fires. Aircraft in general and fixed-wing retardant planes specifically have traditionally played an important role in supporting operations. Helicopters and helibuckets are proving to be tools well-adapted to dropping water.



Map of Alaska overlaid on map of the Western States showing relative locations of fire control dispatch centers, circles, and uncontrolled fires, dots, on August 2, 1968.

The tactical problems facing the Bureau of Land Management in meeting its fire control objectives in interior Alaska are unique when compared with the contiguous States. Vastness of the country, lack of roads, and difficult ground travel are part of the difference. The area protected is 225 million acres. There are 4,457 miles of State roads, of which 1,605 miles are paved. For the total 586,000 square miles within the State, average feet of road per section of land (1 sq. mi.) is 42. Since roads are concentrated between and around areas of population, this leaves immense areas with no access. Tundra, muskeg, and black spruce are associated with poorly drained soils and permafrost on much of the area subject to fire. Travel by foot on this terrain is slow and tiring, and travel by vehicles is often limited to those with low surface

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Table—Use of helicopters by Bureau of Land Management in fire control in Alaska, 1968 and 1969[1]

Year	Flying time		Personnel transported	Water dropped	Cargo transported
	Hours	*Minutes*		*Gallons*	*Pounds*
1968	4,085	25	23,149	1,035,100	2,115,521
1969	10,314	12	56,095	14,805,600	5,244,860

[1] Data provided by Bureau of Land Management.

pressure. It has remained, therefore, the job of aircraft in general, fixed-wing retardant planes specifically, to support fire control operations. To give perspective to the logistical problem, look at a map of Alaska overlaid on a map of the Western States

There were 90 uncontrolled fires burning on August 2, 1968: 23 fires had burned 86,000 acres and were being manned by 2,311 men. Sixty-seven fires of low priority had burned 254,442 acres and were not manned.

Helicopters and Helibuckets Used

Helicopters, used both in addition to and as an alternative to fixed-wing aircraft, are an important tool. The plentiful supply of water throughout Alaska and the use of water-dropping helibuckets, begun in 1968, has resulted in the increased use of helicopters for tactical support of fire control forces.

Interior Alaska's 1968 and 1969 fire seasons were severe. Flying time, personnel transferred, and cargo transported by helicopter slightly more than doubled during difficult 1969 (see table), but the amount of water dropped increased from approximately 1 million gallons in 1968 to 15 million gallons in 1969.

Several sizes of helicopters and buckets were tried during the first season. A small Hiller 12E with a 55-gallon Monzoon bucket could make one round trip per minute and compete costwise on very short haul distances (1,000 feet). A large Sikorsky S61, carrying twin PT-450 helibuckets, could deliver 900 gallons per trip. In 1969, the trend was toward intermediate-size aircraft like the Bell 204-B, with some use of aircraft the size of the FH1100.

Water from helibuckets was dropped to (1) construct temporary and permanent lines, (2) reduce rate of spread and intensity, (3) control spot fires, and (4) facilitate mopup. Dropped water has temporarily stopped active fire fronts in the scattered spruce-tundra fuels characteristic of many large Alaskan fires, providing time for hand crews to successfully construct line. Individual new starts that could have developed into major fires have been controlled. Water has been used during burnout operations to reduce intensity inside the fire line and to prevent ignition of spot fires and slow their spread outside the line. Water has been able to stop individual trees from torching, thus helping to prevent spotting.

Mopup requires precise drops and concentration of water in the subsurface fuels, however, helicopter pilots have difficulty achieving direct hits on isolated hot spots. Perhaps delivering water by helicopter to collapsible tanks for application by ground crews is an alternative.

The main advantage of dropping water by helicopter is timeliness. Because abundant small potholes in the immediate fire area provide a good opportunity for the "hover fill" technique, a helicopter can be diverted from delivering men and supplies to water dropping on a flareup within minutes. The time advantage over ordering retardant aircraft from a distant air tanker base can mean savings of lost lines.

It is becoming common to assign a helicopter equipped for instant hookup of a helibucket to individual project fires. Helicopters and helibuckets for dropping water are proving to be a well-adapted tool for supporting remote Alaska fire control operations. △

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